# Wetting of Rare Gases on Solid $CO_2$

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We present high resolution quartz crystal microbalance measurements of the wetting transitions of Ar and of Ne adsorbed on solid $CO_2$. The model system Ar on $CO_2$ has been the object of an intense theoretical investigation because it provided the first evidence of a real system undergoing a prewetting transition. In contrast to these numerous theoretical calculations, which predict a genuine prewetting transition of Ar on $CO_2$ at about 100 K, we observe the more common phenomenon of triple-point wetting [1]. Detailed density-functional calculations using a more realistic adsorption potential lead to triple-point wetting of Ar on $CO_2$ [1].
Measurements are currently in progress to investigate the nature of the wetting transition of Ne on solid $CO_2$, which recent density-functional calculations [2], employing an adsorption potential determined from ab-initio calculations, predict to be of the first-order. Such a prewetting transition is calculated to occur near 39 K, five degrees below the Ne bulk critical point.

[1] G. Mistura, F. Ancilotto, L. Bruschi, and F. Toigo, *Phys. Rev. Lett*. **82**, 795 (1999).
[2] F. Ancilotto and F. Toigo, to appear in *J. Chem. Phys*.